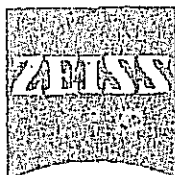


DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für die Meßgröße der geometrischen Optik
Calibration laboratory for measured quantities geometric optics

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)



Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

0726
DKD-K-05202
02-01

Gegenstand
Object Aerial Survey Camera

Hersteller
Manufacturer Carl Zeiss
 D-73446 Oberkochen

Typ
Type RMK A 15/23

Fabrikat/Serien-Nr.
Serial number 134 635

Auftraggeber
Customer I.A.S. Italiana Aero
 Servizi S.r.l.
 Aeroporto S.Egidio
 I-06080 Perugia, Italy

Auftragsnummer
Order No. 40 690

Anzahl der Seiten des Kalibrierscheines
Number of pages of the certificate 4

Datum der Kalibrierung
Date of calibration 09.02.01

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

Der Deutsche Kalibrierdienst ist Unterzeichner des multilateralen Übereinkommens der European co-operation for Accreditation of Laboratories (EA) zur gegenseitigen Anerkennung der Kalibrierscheine.

Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI).

The Deutscher Kalibrierdienst is signatory to the multilateral agreement of the European co-operation for Accreditation of Laboratories (EA) for the mutual recognition of calibration certificates.

The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung sowohl der Physikalisch-Technischen Bundesanstalt als auch des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.

This calibration certificate may not be reproduced other than in full except with the permission of both the Physikalisch-Technische Bundesanstalt and the issuing laboratory. Calibration certificates without signature and seal are not valid.

Stempel
Seal Datum
Date 13.02.01

Leiter des Kalibrierlaboratoriums
Head of the calibration laboratory

 Dr. Wiedenmann

Bearbeiter
Person in charge

 Moller

Carl Zeiss
 Industrielle Messtechnik GmbH
 Mess- und Kalibrierzentrum
 D - 73447 Oberkochen

Telefon 07364-20-3731
 Telefax 07364-20-4511
 E-Mail kalibrieren@zeiss.de

CAMERA TYPE: RMK A 15/23 SERIAL NO. 134635
 LENS TYPE: PLEOGON A2 SERIAL NO. 134660
 MAX. APERTURE: F/4 NOM. FOCAL LENGTH: 153 MM

1) CALIBRATED FOCAL LENGTH = 153.557 MM

2) DISTORTION /0.001 MM, REFERRING TO P.P. OF SYMMETRY PPS

S/MM=	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
5	0	0	0	1	1	2	2	2	1	0	-1	-1	0	1	2	1
6	0	0	0	0	0	1	1	0	-1	-1	-1	-1	1	1	2	2
7	0	-1	0	0	0	1	1	1	0	-1	-2	-2	-1	-1	0	-2
8	0	0	0	1	1	2	1	0	-1	0	0	-1	-1	-1	-2	-2
AV.	0	0	0	0	1	1	1	1	0	-1	-1	-1	0	0	1	0

3) P.P. OF AUTOCOLLIMATION AND FIDUCIAL CENTRE, REFERRING TO PPS

P.P. OF AUTOCOLLIMATION PPA (X= -0.003 Y= -0.006 MM) ←
 FIDUCIAL CENTRE FC (X= -0.007 Y= -0.010 MM) ←

4) FIDUCIAL MARKS, REFERRING TO PPS

X1= 112.990 X2= -113.006 X3= -0.007 X4= -0.007 MM
 Y1= -0.010 Y2= -0.010 Y3= 112.993 Y4= -113.005 MM
 DISTANCES 1-2= 225.996 3-4= 225.998 MM

5) PHOTOGRAPHIC RESOLVING POWER, IN CYCLES PER MM
 (AS PER DEFINITION, R. P. IS NOT A CALIBRATED DATUM)
 AREA WEIGHTED AVERAGE RESOLUTION 80

FIELD ANGLE /DEG = 0 7 14 21 28 35 42

RADIAL LINES 130 115 100 96 91 84 76
 TANGENTIAL LINES 130 128 109 90 80 49 57

FILM: KODAK PANATOMIC X 3412 SPEED 40 AFS
 DEVELOPED IN AGFA G 74 C AVIPHOT

6) Filter

7) Magazines

8) Measuring uncertainty

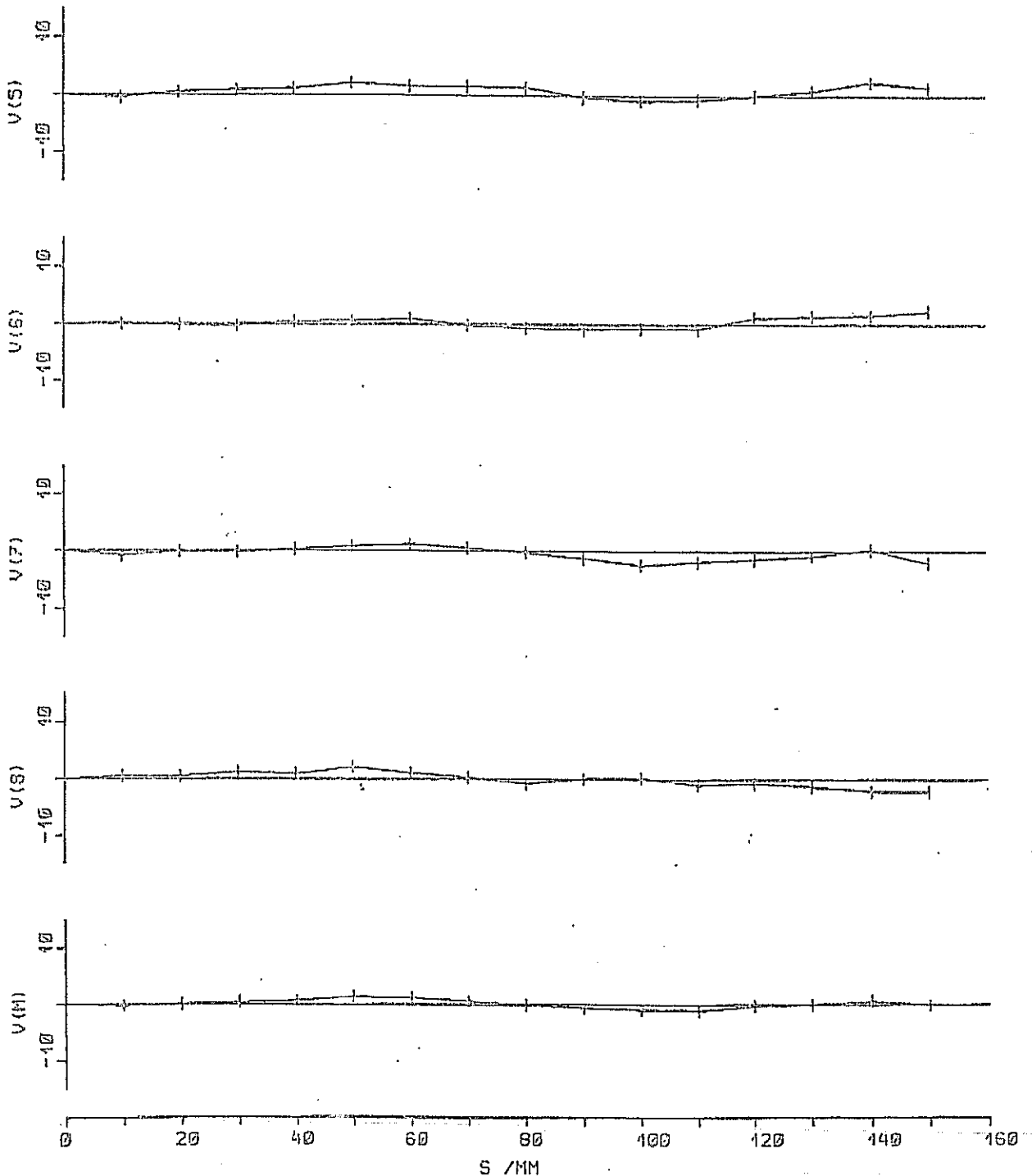
Distortion: U = 3 μm ; Point of symetrie and collimation: U = 3 μm ; Image center: U = 5 μm ; Camera constant: U = 5 μm

The specification indicates the upgraded measuring uncertainty resulting from the multiplication of the standard measuring uncertainty by the factor k = 2. It was determined in conformity with DKD-3. The values of the measurement parameter lie within the specified range with a probability of 95%.

0726
DKD-K-05202
02-01

RMK A 15/23 NO. 134635
PLEOGON A2 4/153 NO. 134660
CFL=153.557 MM

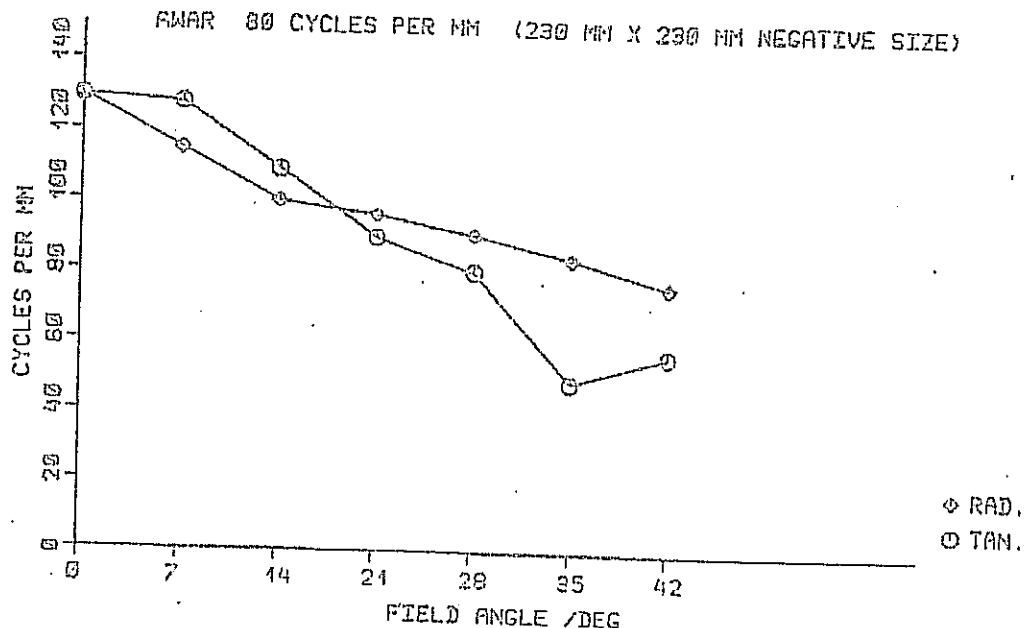
DISTORTION /0.001 MM, REFERRING TO PPS



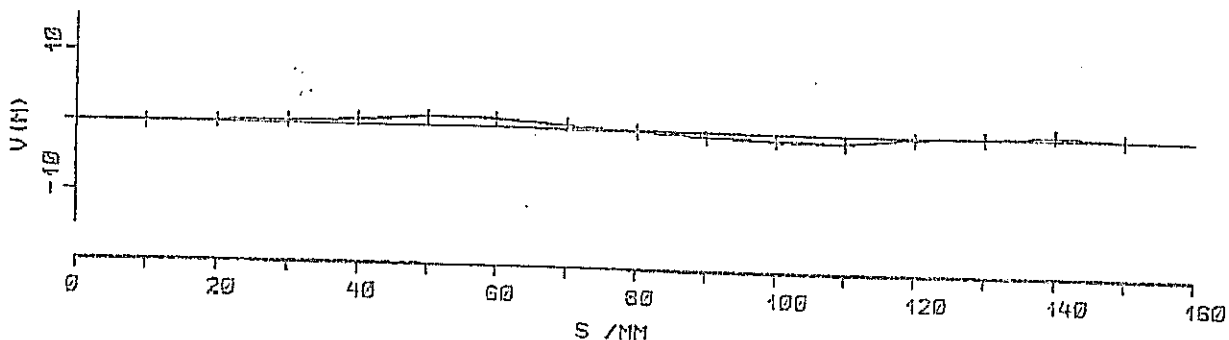
RMK A 15/23

NO. 134635

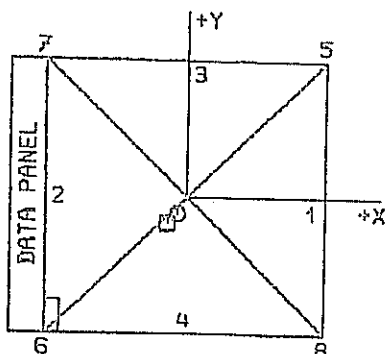
PHOTOGRAPHIC RESOLVING POWER



DEPARTURE OF AVERAGE DISTORTION FROM ZERO REFERENCE



PRINCIPAL POINT (PPA,, PPS) AND FIDUCIAL CENTRE (FC)



COORDINATES, REFERRING TO PPS

	X / MM	Y / MM
○ PPA	-0.003	-0.006
□ FC	-0.007	-0.010

1 — 0.01 MM, X-AXIS AS DEFINED BY FIDUCIAL MARK COORDINATES
 $\alpha(6) = 0.0^\circ$ $\alpha(9) = \alpha(6) + 90^\circ$